

REMARKS

In the Office Action the Examiner noted that claims 1-17 are pending in the application. The Examiner rejected claims 1, 5-8, 12-15, and 17, objected to claims 2-4 and 9-11, and allowed claim 16. The Examiner actually identified claim 16 as being both allowed and objected to. The Applicant is assuming that the allowance of claim 16 is correct, because the objection states that claim 16 is a dependent claim, and it is in fact an independent claim. The Examiner's rejections are traversed below, and reconsideration of all rejected claims is respectfully requested.

Rejection of Claims Under 35 USC §102

In item 2 on pages 2-3 of the Office Action the Examiner rejected claims 1, 5-8, 12-15, and 17 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,253,053, issued to Chu et al. (hereinafter referred to as "Chu"). The Applicant respectfully traverses the rejections.

Claim 1 of the present application recites:

An apparatus which demodulates a code word having a second predetermined bit length greater than a first predetermined bit length, the code word resulting from modulation of a data word having the first predetermined bit length, the apparatus comprising:

a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together; and

a soft demodulator to calculate probabilities of individual bits that constitute the code words, and to generate a soft demodulation value of the data word.

Therefore, "similar ones of the code words are arranged to be grouped together" in the code table provided in the apparatus. This allows the avoidance of requiring each possible iteration of an n-bit length codeword to be represented in the code table.

This is in direct contrast to the disclosure of Chu, which describes a "scheme for variable-length decoding using lookup tables on a computer system" (Column 1, Lines 8-10). The apparatus disclosed in Chu employs multiple lookup tables in which a first lookup table is used for more frequently appearing variable length codewords (VLC's), wherein an additional lookup table or tables are used to decode the less frequent VLC's (Column 3, Lines 65 through Column 4, Line 37). "The VLC is used as an index into a first table, wherein the first table contains decoded values for all possible VLC's with first Y bits not equal to any values in [the] first set of values" (Column 3, Lines 65-69). These first Y bits are separated from the VLC to be compared to the first lookup table (Column 20, Lines 4-6), and "[t]he decoding that cannot be

performed by the first table will lead to indirection into the 'infrequent' table" (Column 20, Lines 16-18). Therefore, Chu discloses multiple lookup tables required to decode the VLC's, and also separating the VLC's into discrete portions so that a first portion can be decoded by the first lookup table, with the remaining portion or portions redirected to an additional lookup table or tables. The separation of the VLC's into discrete portions, as well as the multiple lookup tables required in the apparatus disclosed in Chu, will require additional circuitry that is not required in claim 1 of the present application, which recites "a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together."

Further, Chu merely describes multiple lookup tables in which each table has each iteration possible for an n-bit length codeword. "Each of these tables contain 2^8 entries (256) to allow full decoding of the incoming bit stream" (Column 20, Lines 10-11). Chu does not describe or suggest at all arranging code words to be grouped together in any of the multiple lookup tables provided.

Therefore, Chu does not disclose the feature of "a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together." Accordingly, Chu does not disclose every element of the Applicant's claim 1. In order for a reference to anticipate a claim, the reference must teach each and every element of the claim (MPEP §2131). Therefore, since Chu does not teach the features recited in independent claim 1, as stated above, it is respectfully submitted that claim 1 patentably distinguishes over Chu, and withdrawal of the §102(b) rejection is earnestly and respectfully solicited.

Claims 5-7 depend from claim 1 and include all of the features of that claim plus additional features which are not taught or suggested by Chu. Therefore, it is respectfully submitted that claims 5-7 also patentably distinguish over Chu.

Claim 8 of the present application recites "using a code table comprising a plurality of code words, wherein similar ones of the code words are arranged to be grouped together." Therefore, it is respectfully submitted that claim 8 also patentably distinguishes over Chu.

Claims 12-14 depend from claim 8 and include all of the features of that claim plus additional features which are not taught or suggested by Chu. Therefore, it is respectfully submitted that claims 12-14 also patentably distinguish over Chu.

Claim 15 of the present application recites "a plurality of code words arranged so that similar ones of the code words are grouped together; wherein the code table is divided into a predetermined number of columns containing portions of the code words, and common neighboring portions of the code words are written one time in a single section of the respective

columns.” As discussed above, Chu does not disclose grouping similar ones of the code words together in any of the multiple lookup tables provided in Chu. Further, Chu does not disclose “common neighboring portions of the code words are written one time in a single section of the respective columns.” In fact, Chu does not discuss the organization of common neighboring portions of the code words at all. Therefore, it is respectfully submitted that claim 15 also patentably distinguishes over Chu.

Claim 17 of the present application recites “an efficiently configured decoding table to perform soft demodulation on RLL codes; wherein calculations on common portions of a plurality of the code words are not repeated.” Chu does not disclose “an efficiently configured decoding table to perform soft demodulation on RLL codes,” but rather discloses multiple lookup tables to evaluate separated portions of VLC's. Further, Chu does not disclose avoiding “calculations on common portions of a plurality of the code words.” In fact, as a table to decode an 8-bit code word in Chu contains all 256 entries in an apparently standard format (Column 20, Lines 10-11), calculations on common portions of the code words in that lookup table will necessarily be performed. Therefore, it is respectfully submitted that claim 17 also patentably distinguishes over Chu.

Allowed Claim

In item 3 on page 3 of the Office Action the Examiner allowed claim 16.

Objected To Claims

In item 4 on page 3 of the Office Action the Examiner objected to claims 2-4, 9-11, and 16 as being dependent upon a rejected base claim, but indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As previously discussed in this Response, claims 1 and 8 patentably distinguish over Chu. Further, claims 2-4 and 9-11 depend from claims 1 and 8, respectively. Therefore, it is respectfully submitted that claims 2-4 and 9-11 also patentably distinguish over Chu.

As claim 16 is an independent claim, and was also allowed in item 3 on page 3 of the Office Action, the Applicant assumes that the Examiner erroneously included claim 16 in the list of claims objected to by the Examiner.

Summary

There being no further outstanding objections or rejections, it is respectfully submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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